App. Ser. No. 10/634,779
Docket No. SH-0037US
RYU.014

REMARKS

Entry of this Amendment is proper since narrows the issues on appeal and does not require further searching by the Examiner.

Claims 1-10 and 20-29 are all the claims presently pending in the application. Claims 1, 2 and 20 have been amended to more particularly define the claimed invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicant notes that claims 20-24 and 29 are not subject to any prior art rejections. Therefore, these claims would presumably be allowable if the alleged informalities therein are addressed.

Claims 1, 6, 8, 9, 20-24 and 29 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite.

Claims 1-4, 6-10 and 25-27 stand rejected under 35 U.S.C. § 102(b) as allegedly unpatentable over Bachmann et al. (U. S. Pat. No. 5,067,793). Claim 28 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Bachmann.

Claim 5 stands rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Bachmann et al. in view of Rau et al. (U.S. Patent No. Re. 30,883).

These rejections are respectfully traversed in view of the following discussion.

I. THE CLAIMED INVENTION

The claimed invention (e.g., as defined by claim 1) is directed to an optical fiber preform from which an optical fiber is made by drawing. The preform includes at least one layer and has a maximum value V_0 [log(poise)] of a radial viscosity distribution which is greater than 7.60 [log(poise)] at a temperature T_s which is a temperature at which the maximum value V_0[log(poise)] of radial viscosity distribution of the optical fiber in inside area is 7.60 [log(poise)] in inside and outside area equivalent to two times of mode field diameter on which

light at wavelength of about 1385nm propagates through an optical fiber made by drawing the preform.

A transmission loss in a conventional optical fiber rises sharply at a wavelength of about 1385 nm (Application at page 2, lines 16-29; Figure 2). This is caused by a vibration of an OH group contained in the optical fiber which absorbs light at this wavelength (Application at page 3, lines 9-10).

The claimed invention, on the other hand, includes a preform having a maximum value V_0 [log(poise)] of a radial viscosity distribution which is **greater than 7.60 [log(poise)]** at a temperature T_s (e.g., a temperature at which the maximum value V_0[log(poise)] of radial viscosity distribution of the optical fiber in inside area is 7.60 [log(poise)]) (Application at page 4, lines 13-24; Figure 5). In the claimed invention, even if the optical fiber pulled from the preform is exposed to a hydrogen atmosphere, a rise in the transmission loss (e.g., an OH peak) at a wavelength of 1385 nm may be suppressed by controlling a radial viscosity distribution (e.g., around the softening temperature of the preform) (Application at page 9, lines 10-14).

II. THE 35 USC §112, SECOND PARAGRAPH REJECTION

The Examiner alleges that claims 1, 6, 8, 9, 20-24 and 29 are indefinite. Applicant would submit, however, that these claims are not indefinite.

In particular, the Examiner alleges that these claims "recite functional limitations without any accompanying compositional limitations" and "provide no structure or composition". The Examiner is clearly incorrect.

Indeed, Applicant would point out that claims 1 and 20 recite "***at least one layer*** *having a maximum value* V_0 *[log(poise)] of a radial viscosity distribution which is greater than 7.60 [log(poise)] at a temperature* T_s ...", and claim 29 recites "***a plurality of layers***, *a maximum value,* V_0, *of a radial viscosity distribution in said plurality of layers being greater than 7.60 [log(poise)] at a temperature,* T_s". Applicant respectfully submits that the phrase "at least one layer" and the phrase "a plurality of layers" may include some structure. Thus, contrary to the Examiner's allegations, claims 1, 20 and 29 do not merely recite functional limitations, and are clearly not indefinite.

Further, Applicant would point out that MPEP §2173.02 provides that the Examiner should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness, and that some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire.

In addition, MPEP §2173.02 provides the definiteness of claim language must be analyzed, not in a vacuum, but in light of: (A) The content of the particular application disclosure; (B) The teachings of the prior art; and (C) The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made. When considered in this light it is clear that claims 1, 20 and 29 apprise one of ordinary skill in the art of the claim scope and provide clear warning to others as to what constitutes infringement of the patent. In addition, it is clear that a person of ordinary skill in the art could interpret the metes and bounds of claims 1, 20 and 29 so as to understand how to avoid infringement.

In view of the foregoing, the Examiner is respectfully requested to withdraw this rejection.

III. THE ALLEGED PRIOR ART REFERENCES

A. Bachmann

The Examiner alleges that Bachmann teaches the claimed invention of claims 1-4, 6-10 and 25-27, and makes obvious the invention of claim 28. Applicant would submit, however, that there are elements of the claimed invention which are neither taught nor suggested by Bachman.

Bachmann discloses a single mode optical fiber having a core and at least one cladding layer with a refractive index which is smaller than the refractive index of the core (Bachmann at col. 4, lines 13-25).

However, Bachmann does not teach or suggest a preform having a maximum value V_0 [log(poise)] of a radial viscosity distribution which is **greater than 7.60 [log(poise)] at a temperature T_s** (e.g., a temperature at which the maximum value V_0[log(poise)] of radial

viscosity distribution of the optical fiber in inside area is 7.60 [log(poise)]) (Application at page 4, lines 13-24; Figure 5).

As noted above, the claimed invention may control a radial viscosity distribution (e.g., around the softening temperature of the preform). Thus, unlike conventional preforms, in the claimed invention, even if the optical fiber pulled from the preform is exposed to a hydrogen atmosphere, **a rise in the transmission loss (e.g., an OH peak) at a wavelength of 1385 nm may be suppressed** (Application at page 9, lines 10-14).

Clearly, these features are not taught or suggested by Bachmann. Indeed, Applicant would point out that in the preform of the claimed invention (e.g., the preform of claim 1), a maximum value V_0 [log(poise)] of a radial viscosity distribution of the optical fiber preform in an outside area may be greater than that of an inside area, in an inside and outside area equivalent to two times of mode field diameter on which light at wavelength of about 1385nm propagates through an optical fiber.

Specifically, if an optical fiber preform has a structure such that a maximum value V_0 [log(poise)] of a radial viscosity distribution in an inside area is equal to that of an outside area, the following drawback may be caused. That is, when the preform is drawn, a defect is generated in the glass of the optical fiber due to a drawing stress at the inside area. Hydrogen may then react with this defect existing in the glass of the optical fiber when the optical fiber is exposed to a hydrogen atmosphere after the preform has been drawn. Consequently, the OH peak rises due to the generation of the OH group.

Thus, in order to inhibit (e.g., eliminate) the above drawback, a maximum value V_0 [log(poise)] of a radial viscosity distribution of the optical fiber preform in an outside area may be greater than the maximum value V_0 [log(poise)] of a radial viscosity distribution of the optical fiber preform in an inside area. Nowhere is this taught or suggested by the cited references.

Indeed, Applicant would point out that Bachman teaches a preform which includes on an inside of a quartz glass tube 4, a quartz glass layer 4A, a doped quartz glass layer 3, another doped quartz glass layer 2, and another doped quartz glass layer 1 (Bachman at col. 3, lines 12-26). That is, Bachman merely teaches that the layers 1, 2, 3, 4 and 4A are made of quartz glass,

but **makes absolutely no reference to the viscosities of any of the layers in the preform.** Moreover, Backman certainly does not teach or suggest any preferred relationship between the viscosities of any of these layers. Therefore, Bachman clearly does not teach or suggest that a maximum value V_0 [log(poise)] of a radial viscosity distribution of the Bachman preform in an outside area should be greater than that of an inside area.

Further, the Examiner alleges that the viscosities and radial viscosity distribution in a preform are properties inherent to the materials. Applicant submits that this is not correct.

Indeed, Applicant would point out that the present Application includes a detailed discussion regarding viscosities of quartz glass (e.g., Application at page 13, lines 1-24). For example, the Application provides that native quartz glass has a higher viscosity than synthetic quartz glass (Application at page 13, lines 10-11) and that a crystallization quartz glass manufactured by depositing microcrystal in synthetic quartz glass has a higher viscosity than a conventional synthetic quartz glass, and so on (Application at page 13, lines 13-15).

Therefore, it is clearly not inherent that any of the quartz glass layers in Bachmann will have a particular viscosity. Moreover, it is certainly not inherent that the viscosities of the glass layers would have any particular relationship. Indeed, Bachmann may teach that some of the layers may include doped quartz glass (e.g., layers 1-3). However, **nowhere does Bachmann teach or suggest that the doping should be performed to provide a particular viscosity or viscosity distribution for any of these layers.**

Therefore, Applicant would respectfully submit that there are elements of the claimed invention that are not taught or suggested by Bachmann. Therefore, the Examiner is respectfully requested to withdraw this rejection.

B. Rau

The Examiner alleges that Bachmann would have been combined with Rau to form the invention of claim 5. Applicant would submit, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

Rau discloses a method of producing a fluorine-containing synthetic quartz glass in

which a hydrogen-free silicon compound is heated in a hydrogen-free gas stream while the gas stream is passed through an induction coupled plasma burner (Rau at Abstract).

However, Applicant would submit that these references would not have been combined as alleged by the Examiner. Specifically, in contrast to Bachmann which is directed to a method of making a single mode optical fiber, Rau is merely intended to improve a method of producing fluorine-containing synthetic quartz glass. Thus, Rau is unrelated to Bachmann, and no person of ordinary skill in the art would have considered combining these disparate references, absent impermissible hindsight.

Further, Applicant would submit that the Examiner can point to no motivation or suggestion in the references to urge the combination as alleged by the Examiner. Indeed, contrary to the Examiner's allegations, neither of these references teach or suggest their combination. Therefore, Applicant would respectfully submit that one of ordinary skill in the art would not have been so motivated to combine the references as alleged by the Examiner.

Specifically, the Examiner attempts to support the alleged combination by stating "[b]ecause Rau teaches a synthetic quartz glass whose index of refraction can be varied in a prescribed manner with the use of dopants ..., it would have been obvious to a person having ordinary skill in the art at the time of the invention to use the synthetic doped quartz glass of Rau as the doped quartz of Bachmann" (Office Action at page 6).

That is, the Examiner's only argument is that these references would have been combined because the references could have been combined. However, it is well settled that this argument is no sufficient to support the alleged combination.

Indeed, MPEP §2143.01(III) makes clear that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Moreover, MPEP § 2143.01(IV) makes clear that a statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993).

Therefore, the Examiner has failed to make a prima facie case of obviousness.

Moreover, neither Bachmann, nor Rau, nor any combination thereof, teaches or suggests a preform having a maximum value V_0 [log(poise)] of a radial viscosity distribution which is greater than 7.60 [log(poise)] at a temperature T_s (e.g., a temperature at which the maximum value V_0[log(poise)] of radial viscosity distribution of the optical fiber in inside area is 7.60 [log(poise)]) (Application at page 4, lines 13-24; Figure 5). As noted above, unlike conventional preforms, in the claimed invention, even if the optical fiber pulled from the preform is exposed to a hydrogen atmosphere, a rise in the transmission loss (e.g., an OH peak) at a wavelength of 1385 nm may be suppressed by (Application at page 9, lines 10-14).

Clearly, these features are not taught or suggested by Rau. Indeed, the Examiner attempts to rely on col. 2, lines 11-32 and 39-43, and col. 3, lines 19-37 in Rau to support her allegations. However, nowhere do these passages teach or suggest the novel features of the claimed invention.

In fact, as noted above, these passages in Rau merely disclose a method of producing fluorine-containing synthetic quartz glass. Nowhere do these passages even teach or suggest a preform or a radial viscosity distribution in a preform. Certainly, these passages do not teach or suggest a preform having a maximum value V_0 [log(poise)] of a radial viscosity distribution which is greater than 7.60 [log(poise)] at a temperature T_s.

Thus, like Bachmann, Rau is unrelated to the claimed invention. Thus, Rau clearly does not make up for the deficiencies in Bachmann.

Therefore, Applicant would submit that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention. Therefore, the Examiner is respectfully requested to withdraw this rejection.

IV. FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1-10 and 20-29, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

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Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 1/31/06

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CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that the foregoing was filed by facsimile with the United States Patent and Trademark Office, Examiner Elizabeth Ivey, Group Art Unit # 1775 at fax number (571) 273-8300 this 31st day of January, 2006.

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